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Index to Contents, Page 4

Advertising Index, Page 33

When the Mercury Drops Suddenly

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The Franklin Quick Removable Gas Burner System, as illustrated, is an auxiliary heating appliance for use on coal furnaces and boilers.

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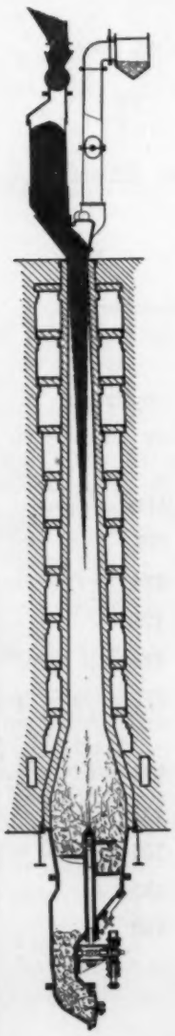

American Installations

Fitchburg, Mass.
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Pawtucket, R. I.
Portland, Me.
Ottawa, Ont.
Montreal, Que.
Fitchburg, Mass. (Repeat)
Pernambuco, Brazil
Santos, Brazil
Montreal, Que. (Repeat)
Vancouver, B. C.
Victoria, B. C.
Montreal, Que. (2nd Repeat)
Watertown, N. Y.
Malden, Mass.
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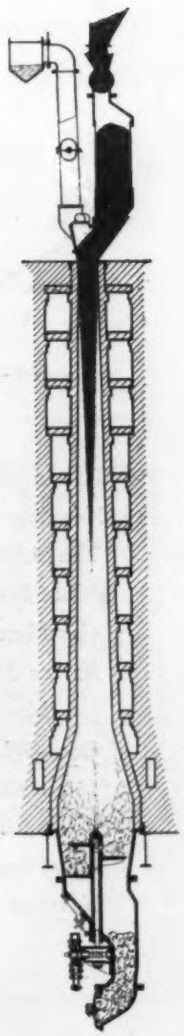

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"MEMBER OF THE AUDIT BUREAU OF CIRC ULATIONS"

Contents of This Issue

Gas in the Newspaper Plant—By H. S. Christman 171
Keeping Customer-Owners Interested—By S. J. Ballinger 173
The Sulphur Content of Coal Gas—By A. Grebel 174
Ideas for the Man Who Sells—By William H. Matlack 175
Gas Men at M. I. T. 176
As the Journal Views It 177
Meter Reading and Bill Delivery
Gas—What of Its Future? 178
Industrial Gas Lesson No. 85 179
Progress in Gas Technology 181
Gas-Fired Laundry Equipment—By W. B. Stoddard 183
News of the Gas Industry 188

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AMERICAN
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Gas in the Newspaper Plant

Interesting examples of application of gas to type melting

H. S. Christman

Assistant Commercial Agent, Philadelphia Gas Works

IN this subject, I believe we have a use for gas that is common to any situation, however large or small. Some situations may claim not a single manufacturing industry, yet I dare say almost every town of any size has its daily morning or evening edition, or at least a weekly newspaper.

Gas utilization in the newspaper plants is good business for the gas company. The demand is usually uniform and in the case of a morning paper the demand comes off the daily peak and is an all-year-round demand. The monthly consumption is surprisingly constant.

Metals Used in Newspaper Industry

Before giving data on the use of gas for this subject, let me briefly discuss the three kinds of metals used in the industry.

(1) Linotype metal which is cast into type by the linotype machines is made from a composition of lead, antimony, and tin, usually in the respective proportions of 80 per cent, 15 per cent, and 5 per cent. The proportions varied by different manufacturers in their endeavor to obtain the following properties:

(1) A low melting point.
(2) Clear type.
(3) Hardness to withstand wear.
(4) Toughness to prevent shrinkage or warping.

The virtues of lead which is the base metal is its cheapness, combined with low melting temperature; it is easily cut and easily alloyed with the other metals. The addition of antimony gives the metal hardness and prevents shrinkage. Tin is added to toughen the mixture and to act as a binder to form a uniform compound. This metal is used in the linotype and monotype casting machines with which no doubt you are all familiar.

Effect of Melting

Constant melting and remelting at too high a temperature causes this metal to deteriorate, the percentage of antimony is reduced, and when skimming off the dross, some tin will be lost. Every printer using linotype and monotype machines must provide a remelting furnace to remelt the old type into slugs to be used again, at which time toning metal is added to bring the metal to the proper condition. Small pot furnaces (250 to 1,000 pounds capacity) equipped with atmospheric gas burners are usually employed for this remelting operation.

Electrotype Metal

Electrotype metal is used for backing up the copper electros used for book work and job printing. Gas plays an important part in the melting of this backing up metal known as electrotype metal, and consists of 96 per cent lead, 2 per cent tin, and two per cent antimony.

As we are all probably familiar with the use of gas in the two above-mentioned processes, I will pay little attention to these, as this business usually comes to the gas company without much effort.

We now come to the chief subject I would like to discuss in more detail—that of melting stereotype metal.

Stereotype Metal

Stereotype metal is used for the plates on which the composed type of a whole newspaper page is cast in one curved piece. The object is to preserve the composition in permanent form, to fit the cylinder press, and to make a number of plates from one matrix.

Sheets of tissue paper pasted together and backed with damp unsized paper constitute the mould or matrix for the process. They are firmly and evenly impressed on the page of type set in a form and are dried under high pressure steam presses. When

dried they are removed and adjusted in a curved metal mould into which melted stereotype metal is poured. The formula for this metal is liberal in tin and antimony, and will give long service without retoning.

The plate imprinted from the matrix is then cooled, planed, and beveled to fit the press. Furnaces for the melting of stereotype metal vary in size from pots holding 1½ tons to 8 tons of metal.

Gas Applications

To show the gas applications, I have selected:

1st: A 1½ ton furnace installation which is the size used in the average small daily paper or weekly publication.

2nd: A 5-ton furnace found in the newspaper plant of the medium size city, of say, 75,000 to 125,000 population.

3rd: A battery of 8-ton furnaces found only in the daily papers of large cities.

First:—The data for the 1½-ton stereotype furnace was obtained in the plant of a small daily newspaper, using a Wessel stereotype melting furnace equipped with a set of six pyrogenetic burners, and using a fan blower to provide air for combustion. No holding burner is used on this furnace to keep metal in molten state during stand-by period. Casting is started at 8 P. M. and is finished at 3 A. M. the next morning. An average of 40 plates are cast daily, each plate weighing eighty pounds.

Data on Test

During a test day, fifty plates weighing 80 pounds each, were cast, equalling 4,000 pounds of metal. This included what is known as tail pieces, which are the ends of the castings that are trimmed off, and not included in the finished plate, but must be included in metal melted. The total gas consumption, 1,900 cu. ft., shows 2.1 pounds of metal melted per cubic foot of gas.

The data obtained on the operation of a five-ton stereotype furnace was taken from the installation in the plant of a daily evening paper. This is a popular size installation and is typical of equipment found in cities of about 100,000 population. This furnace was equipped with a made-up burner of twenty 1½ inch cast iron burner heads manufactured by the Eclipse Fuel Engineering Company.

Combustion was supplied through a McKee proportional mixer. No burner was installed for keeping metal molten during stand-by periods.

Metal was allowed to cool during the night. Furnace lighted 6 A. M. and casting started 9 A. M. and continued until 6 P. M. During this period, an average of 196 plates were cast, each weighing about 65 pounds. Total amount of metal cast per day averaged 12,740 pounds. The average amount of gas consumed for the above work was 4,250 cu. ft. per day, or approximately 3 pounds of metal per cu. ft. of gas.

Burner Equipment

The burner equipment was installed by removing the coal grate in the furnace and inserting burner heads on a circular manifold erected on the floor of the furnace. The air and gas mixture was supplied by a McKee proportional mixer, giving the advantage of one-valve control.

In addition to the above melting equipment, this plant has installed one 7 H. P. and one 5 H. P. gas-fired steam boiler, supplying high pressure steam for four matrix tables, 18 linotype machines, one 1,000-pound remelting furnace and three Ludlow monotype casting machines. The annual gas consumption at this plant averages 1,500,000 cu. ft.

Public Ledger Installation

The third and largest installation I will describe is typical of the largest cities in newspaper establishments having large circulations. This equipment is installed in the plant of the Public Ledger, Philadelphia, and consists of three 8-ton auto plate stereotype furnaces, two 5-ton melting furnaces, two matrix roasters, three etching stoves, and several burners for miscellaneous heating.

In obtaining this business, the greatest sales resistance was encountered in the stereotype department. This paper had always used coal in this department at an average monthly cost of $500. It was hard for them to justify an estimated monthly expenditure of $1,000 for gas in additoin to interest and depreciation on the necessary investment. However, after a long and careful investigation on the advantages as set forth by us, they gave us their order for a complete gas equipment.

We installed a Surface Combustion system for all the furnaces, and equipped the burners with automatic temperature controls. Air for combustion was supplied by a duplicate set of Spencer Turbine pressure blowers. The specifications on this job demanded the best gas equipment obtainable in regard to durability, low operating cost and ease of operation. Initial cost was a second consideration. Specifications on the operation of the 8-ton furnaces called for a guarantee that the furnaces should have sufficient burner capacity to melt and maintain a full pot of metal at 600° F. during the heaviest casting period, and that they could cast 7 pounds of metal per cubic foot of gas consumed during a test casting period, and over a 24-hour period, including casting and stand-by periods, they would average 5 pounds of metal cast per cubic foot of gas consumed.

The Test

I will briefly outline the test we ran after the installation to support and prove the above guarantee.

Of the three 8-ton furnaces, only two are used for casting—the third is always kept at temperature for reserve or breakdown. I might say, during the year and a half these furnaces have been installed the third furnace has never been called on

(Continued on page 185)

Keeping Customer Owners Interested*

Importance of customer ownership and plans for continuing relations

S. J. Ballinger

Manager Investment Department, San Antonio Public Service Company, San Antonio, Texas

AN irate gentleman rebuked a waiter as follows: "Look here, waiter, I just found a needle in my soup!"

The waiter, who was formerly a stenographer, replied: "Merely a typographical error, sir. It should have been a noodle."

Not much of a story, I confess, and old enough to have long whiskers, but the point is, let us have no typographical errors in our customer ownership plans. Let us not take off the lid and find an investor where we really wanted a partner.

A stockholder walked into my office a few weeks ago for a little chat about our business. At the time certain conditions in San Antonio had elevated our company to the front page of the daily newspapers. You utility men appreciate that front page advertising of certain kinds is the easiest to get and by all means the most costly. After we had exchanged a few remarks and my partner had expressed a desire to be of service to the company, she said something about like this: "I don't see why anyone should want unnecessary competition in our business. There is no need for it where rates and operations are regulated and controlled. My money is invested here and I want a fair run for it."

How the Customers View Their Interest

That lady, for it happened to be one, was a partner in our business. Only about a week ago an official of our company answered the telephone and learned that another stockholder was on the other end of it. This was her offering: "Our company is laying a gas main in my block and I have been sitting here at the window watching them all the morning. I think you ought to know that the foreman of the crew has been sitting around doing nothing for hours. We can't afford that kind of business."

Another one drops into my office and tells me with a broad smile: "I just received my interest today and was surely pleased."

I tell her that we do not give her any interest, but that we pay dividends on the money she has invested; that she can wear that smile which is becoming and draw her dividends quarterly so long as we are permitted to earn that money. Another customer will come in bringing a friend and ask, "Are you still borrowing money at 8 per cent?" I explain carefully that we have not been borrowing money at 8 or any other per cent, but that we have been selling a partnership in our company and that the money so invested carries an 8 per cent return.

Others put it another way and want to know if we are still accepting money from our customers for deposit; or perhaps they ask if we have sold all our bonds.

Sell the Company, Not a Certificate

May I ask, when you sell stock do you merely sell a certificate or do you sell someone a partnership in your business? Does the purchaser leave your office and say to his neighbors and friends with pride, "This is my company. I am one of its owners." Gentlemen, when this expression flows freely, frequently and easily from the tongues of the millions who have already purchased stock and the millions who are going to purchase stock, put on your stockings, fill up your pipe and be comfortable. The future of the industry will then be assured. If the purchaser leaves your office merely feeling that he has made a good investment and not that he is a part owner of the biggest business in your city, you have done good work, but the sale has not been completed. If his own interest in the transaction is the interest on his money and if you have not shown him the difference between dividends and interest, your sale is still incomplete. Briefly, we want investors, but we want to make owners out of them. As a man thinketh so is he. Make them think right.

Mutual Relation Important

The thought is that we must build on our original foundation and our continued relations with stockholders will depend largely upon our initial relations. If we bring them into our family with a clear vista of themselves as owners of a great business it will not be so difficult to make interested partners out of them. If we sell them a piece of property and leave them under the impression they have loaned us money the route is longer and harder and the evolution of public ownership is greatly retarded.

Essential of Successful Customer Ownership

I shall now endeavor to outline my ideas of those things necessary in selling stock to our customers, to our employees and to the public if we are to lay a foundation for the most effective continuation of customer ownership relations.

1. The very basis of a successful sale and foundation of pleasant, satisfactory relations, present and future, is deadly accuracy. Those selling must know their stuff. Tell the whole story and tell it truthfully. If you can get an encore repeat the chorus. We don't need high-pressure salesmen in this business. I had rather trust a loyal, well-informed employee to tell his story simply and clearly than to put my trust of building up customer ownership in the best salesman obtainable.

(Continued on page 186)

The Sulphur Content of Coal Gas*

Some observations on the quantity of sulphur in gas

A. Grebel

RECENT communications on the liquid purification of gas, the verbal discussions and the printed commentaries, which have appeared from time to time, have served to create in the minds, of certain readers at any rate, confusion as to what was meant by sulphur content, whether it referred to the actual content of the element sulphur in the gas or of the gas, sulphuretted hydrogen. This lack of co-ordination between the writer and the reader has given rise to certain errors among some gas men which the author deems it proper that he should endeavor to clear up.

It is known that the sulphur which is present in coal gas is in the form of sulphuretted hydrogen, carbon disulphide, thiophene and other thiohydrocarbons, and sulphocyanogen. It is evident also that the hydrogen sulphide may be combined with ammonia to give ammonium sulphydrate, but this combination is not a stable sulphurized product.

Sulphur Content of Gas

It is known that the raw gas, as it is manufactured, just after coming from the gas retorts, contains approximately the following amounts of sulphurized products per cubic meter:

3.30 grams in the form of hydrogen sulphide.

0.2 to 1.5 grams in the form of carbon disulphide, thiophene and thio-hydrocarbons.

(The percentage of sulphohydrocyanic acid may be neglected.)

Of course the variation of sulphur in the coal will bring about variations in the sulphur content of the gas that is manufactured from it.

After the gas has been washed with water and purified with the aid of oxide of iron, its content of sulphuretted hydrogen, figured as sulphur, is ordinarily reduced to the neighborhood of a milligram in one cubic meter. On the other hand, the carbon disulphide and the thio-hydrocarbons are removed with difficulty and are often found in gas to the amount of 0.13 gram to one gram per cubic meter.

The tabulation which follows shows the variation in the total sulphur content of the gas during the course of its treatment, starting with an initial content of ten grams per cubic meter.

Variation in the total sulphur content of gas at different points in the purification process (average figures are given):

At the exit of the retorts—10 grams per cubic meter of gas.

At the exit of the condensers—8.5 grams per cubic meter of gas.

At the exit of the ammonia washers—6 grams per cubic meter of gas.

At the exit of the purifiers—0.4 gram per cubic meter of gas.

At the exit of the benzol washers—0.3 gram per cubic meter of gas.

Determining the H_2S Content of Gas

The content of sulphuretted hydrogen in the gas has not been determined by gravimetric methods, but it has been customary to insert a piece of lead acetate paper in the stream of gas. This paper will detect 0.0014 gram of sulphuretted hydrogen in one cubic meter of the gas. If the paper does not turn brown and thereby indicate the presence of the sulphuretted hydrogen in the gas, then it is generally assumed that the content of the hydrogen sulphide in the gas is less than the aforementioned quantity.

The author has developed a new method for testing the hydrogen sulphide content of gas which enables the gas man to assure himself of the complete absence of this impurity in his product. The apparatus in which this test is carried out is seen in the accompanying figure 1.

In this apparatus F is a small piece of paper, which has been impregnated with a solution of basic acetate of lead. C is a glass globe in which the paper is suspended and through which the gas that is being tested is allowed to flow from a Bengal burner B or through a fish tail burner or other suitable burner. The test lasts for one-quarter of an hour and during that time the gas is constantly flowing through the apparatus under a pressure of three millimeters. If the test paper remains white after this treatment then it may safely be assumed that the coal gas does not contain any sulphuretted hydrogen.

FIG. 1.

The Total Sulphur

Under certain conditions it is essential to determine very accurately the total sulphur that is present in the gas. There are, of course, various regulations that affect this ingredient of gas, and these vary in accordance with the standards set by various communities.

Figure 2 shows apparatus which is used in the determination of the total sulphur content of illuminating gas. The method is one that is recommended to referees on this important gas problem.

It consists essentially in burning one hundred liters of gas at the rate of ten to fifteen liters per hour in a small Bunsen burner. Around this burner there are placed a number of crystals of carbonate of ammonia which give forth vapors of ammonia gas. The products of combustion, that are obtained by the burning of its gas and which are loaded with aqueous

*Chimie et Industrie, 1925, pages 911-12.

(Continued on page 185)

GAS MERCHANDISING

Domestic – Industrial

Ideas for the Man Who Sells

William H. Matlack

"CHEERS FOR THE LIVE ONES AND FEARS FOR THE DEAD"

WE are quoting a little preachment sent us by one of the go-getters in the gas industry. It was sent in for the purpose, so he said, of "making a story." The philosophy contained in the text "as is" coming, as it does from the travelog of a man who has been in the gas business all his working days and who year in and year out meets and talks to many gas men here and there, should not be "rehashed," for "rehashing" might cramp his style, so we give it to you as it came to us.

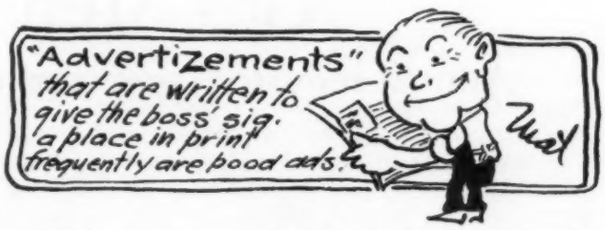
It will be noted that this man is sold on the future of the industry (and he sells the industry a big volume of merchandise), yet in his philosophy there is that alum twang of dissatisfaction that is so essential to any industry that is on the way up, that wishes to prove that it is alive.

"Are You a Forward-Looker?

"Before we start we would like to say we do not wish to disturb dormant Gas men who hang this sign on their office door:

Attention!
I do not wish to be disturbed by employees knocking on door to deliver new ideas, good suggestions or intelligent criticisms.
DO NOT DISTURB.

"The gas business is a business of growing strength. The gas industry has made a wonderful growth during the past ten years—out of all proportion to the growth in population. More encouraging still, from the investor's standpoint, is the much more intensive use of plants and an increasing revenue from gas works investment.



"Before we proceed, let us steer around the Gas Man who has hung out this sign:

QUIET
For my benefit please do not talk loudly of new business for I have retired into my groove.

"Wall Street is saying the gas business is a good business, and seems to think it is the Christopher Columbus who discovered industrial uses for gas. Thousands of them tell you to get plenty of public utility bonds among your investments. But before we venture further, let's dodge all of the breed who hang out this shingls:

Notice!
No money shall be spent for proper purification of gas while I am manager. All Gas Heaters Smell.

"Most live gas men are working not only for industrial gas but for house-heating gas and working away with high hopes of success and five years from now Wall Street will discover gas is the right fuel to back for heating homes, and offices, too!

The High Bill Howler

"Let's give a wide berth to the homo who hails the high-bill howler with:

Have You An Automatic Heater?
You have!
Ah! There's your high bill!

"With gas running through pipes to the consumer's bidding, now is the time for the right kind of appli-

ances in the right place and the right sort of a gas company representative to analyze the gas bill. Let's have more intelligent men, carefully trained, to meet the issue and show the consumer where he can get his money's worth.

"Intelligent explanations of the gas bill will make for stability and security of the gas company. Where the public does not understand, it condemns."

This man has simply hit the high places. Yet in typing his ideas we find much food for thought and no doubt other gas men will do the same.

The suggestion "Let's have more intelligent men, carefully trained," holds a big idea, especially in the selling end of the business. Yet what can one expect if first of all a plan not only to "get" but to "hold" men of the "intelligent, carefully trained" order is not worked out. "The Drifter" is said to be almost everything except an individual totally lacking in ambitoin. And ah! there is the rub! It's the joker in the plan of compensation that causes many men to "fold their tents and silently wander away"—become drifters, hoping all the while to be able ot earn a just rate of compensation that will not change the moment his earnings climb above that of "fixed fellow" in the organization.

Gas Men at M. I. T.

Annual industrial gas class ends fourth year of existence

The Fourth Annual Industrial Gas Course was held at Massachusetts Institute of Technology, Cambridge, Mass., from June 22 to July 3, 1925, under the direction of Professor Gordon B. Wilkes. An intensive program comprising lectures by members of the Institute staff, as well as lectures by well-known members in the industry, were given.

Thirty-eight men were enrolled by twenty-four gas companies in this course as follows:

H. A. Alward, Charlestown Gas & Electric Company; E. E. Bates, N. Tufts Meter Works, Boston; R. H. Staniford, H. Behrman, T. B. J. Merkt, A. Palmer, Brooklyn Union Gas Company; W. M. McConaghy, Citizens Gas Light Company, Quincy; F. F. Bauman, Dedham & Hyde Park Gas & Elec. Co.; A. M. Anderson, Boston Consolidated Gas Company; N. R. Millard, Newton Div., John Doughty, E. Boston Div., Boston Consolidated Gas Company; R. D. Hawkins, J. D. Clark, Worcester Gas Light Company; A. L. Millette, O. A. Carroll, Brockton Gas Light Company; R. L. Thompson, Portland Gas Light Company; F. W. Beals, Old Colony Gas Company, E. Braintree; W. H. Hanson, F. E. Hanson, Providence Gas Company; R. P. Smith, M. A. Purdy, Connecticut Power Company, New London; J. J. Winn, Jr., H. S. Brasseur, Haverhill Gas Light Company; J. G. Elder, Bruce Hyde, Pawtucket Gas Company; R. L. Gifford, C. S. Stackpole, S. D. Brown, Fall River Gas Works Company; H. J. Ayling, New Haven Gas Light Company; G. P. Langton, Arlington Gas Light Company; S. A. Good, E. L. Power, Cambridge Gas Light Company; M. J. Landers, L. W. Horton, Springfield Gas Light Company; T. W. Mattson, C. H. Tenney & Company, Boston; C. W. Caldwell, Beverly Gas & Electric Company; W. V. Lowe, Fitchburg Gas & Electric Company; William Burns, personal.

The accompanying photograph shows in addition to most of the above, members of the Institute staff, Mr. Cyril H. Light of the Peoples Gas Light & Coke Company, Chicago; Mr. N. W. Gifford, vice-president East Boston Division of the Boston Consoli-

(Continued on page 186)

Gas Men at M. I. T., June 22-July 3, 1925

As The Journal Views It

METER READING AND BILL DELIVERY

It has been said before in these editorial columns that the functions of the accounting department, and the part that it plays in the gas industry, are far more important than one would suppose from superficial examination. It has been called to the attention of gas men, that the accountant in the gas industry is far from being a mere bookkeeper, and that his work goes a long way towards insuring the success of the gas company as a commercial factor.

One of the important functions of the accounting department of the average gas company is the supervision of meter reading and bill delivery. At a first glance, it might appear that meter reading is a purely minor operation and one which has no importance whatsoever, as far as the welfare of the gas company is concerned. In fact, a great many gas men have been inclined to consider the meter reader as perhaps the most unimportant member of the gas organization. Accordingly, no attention has been paid by many companies to the work of meter reading and to the effect that the way in which it is conducted might have on their customers.

It remains a fact, however, that the meter reader is one of the members of the gas organization, that comes into contact with the public, and it is just for this reason that he is by no means the least important employee of the gas company. In fact, all gas men that have personal intercourse with gas customers are important gas employees, although their actual duties may be very simple. Thus, while the mere physical effort and mental intelligence involved in reading a meter are not very difficult to master, the meter reader in the course of performing his duties frequently comes into contact with gas consumers, and his work accordingly assumes a significance which is not always appreciated.

It therefore follows that the gas company should give careful attention to selecting the proper meter reading personnel. It must also give due consideration to various problems that are concerned with meter reading and bill delivery and collection as well.

For example, there is always a certain amount of reluctance on the part of the average gas customer toward admitting a stranger to her home. The question then arises, should the meter reader wear a uniform or carry some distinctive badge or mark to identify him? If it were easy to distinguish him as a member of the gas organization, this hesitancy towards admitting him would be removed.

Furthermore, if the meter reader wore a uniform, it would do away with the tendency that these men generally have, to wear the oldest clothes they possess in going about their work. This is said, not in disparagement of the meter reader, but it is a fact, that they do not like to wear good clothes when on duty. The reasons are evident, for they often have to creep into out-of-the-way places and cellars and other locations where the meters are located. But the fact remains that a poorly dressed meter reader creates a bad impression upon the gas customers. If he wore a neat uniform, there is no doubt that a better impression would be made upon the public with whom he comes in contact.

It is also necessary that the meter reader, and this applies to the bill collector and deliverer as well, be a man who is inherently good-natured, and one who is interested in his work. And at this point it may be mentioned that it is up to the gas company to see that he is kept interested by arranging suitable compensation for him. These men,—meter readers, bill deliverers and collectors,—must be inherently courteous, for courtesy is a big factor in the promotion of public relations. The company must do its part by training these men to see that they are properly acquainted with the functions of their position, and also that they know how to talk to the customers and how to leave them satisfied when any question is asked, or complaint is made. The importance of these men bearing themselves well in the presence of gas customers, of having a smile on their lips and a pleasant good-morning whenever they go into the customers' homes, cannot be over-emphasized. It often happens that these are the only men that some customers come into contact with, and their opinion of the gas company will be based almost entirely on what impression the meter reader or bill collector has made on them.

It must therefore be emphasized once again, that

a meter reader is an important personage in the gas organization, far more so than his actual duties would indicate. He is the point of contact between the gas industry and the public that it serves. He is in a positoin to do the gas industry great injury by displeasing gas customers in one way or another, by acting discourteously, by creating an impression in their minds that the gas company employs an inferior grade of men. On the other hand, these gas men are similarly in a positoin to advance the interests of gas by being ever-ready to answer questions by always being courteous and by showing those whose homes they enter, that the gas company takes great pains in the selection of men even for so simple a task as reading a meter or collecting or delivering a bill.

Gas--What of Its Future?*

Careful analysis shows fine prospects of growth and development

FIFTEEN years ago the predominant question in the minds of those keeping in touch with situation in regard to the gas companies was: What of the future? Had the gas companies any promise for the future or must the industry stagnate and be displaced to a large extent by the use of electricity? Up to that time and since 1900 gas consumption annually had been hovering between 100 billion cubic feet and 150 billion cubic feet for this country and with increasing popularity of the product of the whirling dynamo it was an open question as to whether demand could be increased to any great extent. That gas consumption could be stimulated, and that, to a remarkable extent, is amply proven by the statistics showing gas consumption year by year up to the present time.

Has Saturation Been Attained?

More recently, during the past few years, in view of the rapid increase in gas consumption, the question in the minds of many has been, has the saturation point been reached? Have the gas companies exhausted all available means for stimulating use of gas? Apparently not, if plans for expansion of plant facilities and opinions of leading men in the industry count for anything. Gas consumption this year is still on the increase and while detailed figures are not yet compiled, it is stated by those in position to know, that the curve of the increase shown in the accompanying table is being maintained. Consumption this year, it is estimated, will be well above the 400 billion mark.

There are few perhaps with the exception of those within the industry and those who have made a study of the situation who realize what has taken place in the gas industry within the past ten years. Those unfamiliar with the situation still persist in the belief that gas consumption is in direct competition with that of electricity. With a few small exceptions this is far from being true. Gas used as an illuminant is now regarded as archaic and consumption for this purpose is almost an infinitely small part of the total amount used. More simply it may be stated, both gas and electricity have their places side by side in the public utility field and often use of one stimulates use of the other. Gas can be regarded as the most economical means for production of heat and electricity for power. Each is supreme in its own field and owing to the higher cost the possibility of electricity displacing gas for use in heating in the industrial and the domestic fields seems remote.

Extent of the Industry

During the past ten years, the record of consumption of gas compares favorably with that of electricity. The size of the gas industry in this country may be realized from the fact that 52 millions of people are gas consumers being supplied through 70,000 miles of gas mains and 10 million meters. Gas companies have an annual payroll in excess of $55,000,000. While 16,000,000 people are added to the population of this country each decade, about half of them will become gas consumers, and new customers are being added to the books of the gas companies at the rate of 400,000 a year. Certainly this does not give any indication that a saturation point in gas consumption is likely to be reached within the next few years. Gas companies in 1923 expended 450 millions of dollars to keep plant facilities abreast of growing demand.

Going back to the old bogy of electricity displacing gas, a view widely held even in the industry some ten years ago—how is it that gas consumption has made the remarkable strides it has in this period? First, by natural means. Growth of population has naturally stimulated use of gas, especially for use in industrial heating. Second, by artificial means. By an intensive use of advertising and by finding hundreds of new ways in which gas can be utilized, chiefly for heating.

Increase in Industrial Gas

During the past ten years, industrial use of gas

(Continued on page 180)

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT YOU CAN DO IT BETTER WITH GAS

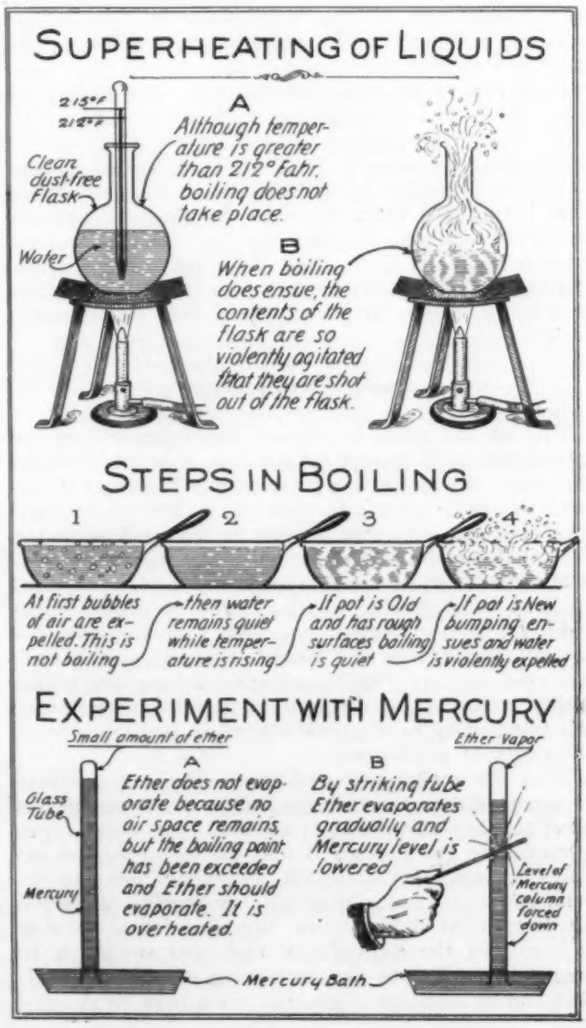
Lesson No. 85

Heat and Change of State

SUPERHEATING

In the determinaiton of the melting point of substances it was said that it is possible under certain conditions to lower the temperature of a substance to a point below the normal freezing temperature without congealation of the substance taking place. This was called undercooling. In the same way it is possible to heat a substance, such as water, for example, to a point above its boiling temperature without the water boiling. This may be done by heating the water in a glass flask which is perfectly clean and free from all dust. Of course, absolutely pure or distilled water should be used in the experiment, and the heating operation must be carried out very carefully and slowly. The liquid will then attain what is known as a superheated condition. Then, when boiling does set in, it takes place with explosive violence and the entire contents of the container may be shot out and lost. It is generally customary to place some rough or porous substance in the flask before starting the boiling process, in order to prevent this sudden boiling or bumping due to overheating of the liquid.

The steps in the boiling operation may have perhaps been watched as a pot of water is being heated on the gas range. The first thing that happens is not boiling, although it would appear that the bubbles that rise in the liquid is a clear indication of the same. These are but bubbles of air that are being expelled and together with them a certain amount of water vapor which first forms around the former is removed from the mass of water in the pot. After the air has been expelled the bubbling ceases and it is then possible to heat the water a few degrees above its boiling temperature before boiling ensues, but when it does the contents of the vessel are most always so violently agitated that they are catapulted out of it altogether. This phenomenon is generally known as bumping and it is common to have it occur when heating water in a new vessel with entirely smooth walls, possessing no rough spots on which the bubbles of steam may form and thereafter be expelled from the liquid portion of the water. After boiling once sets in it is fairly regular without any undue agitation of the liquid. In order to prevent the bumping of the liquid, small porous or rough substances are placed in the bottom of the vessel or a fresh supply of the liquid containing air is added.


SUPERHEATING OF LIQUIDS
215°F
212°F
A
Although temperature is greater than 212° Fahr. boiling does not take place.
Clean dust-free Flask
Water
B
When boiling does ensue, the contents of the flask are so violently agitated that they are shot out of the flask.
STEPS IN BOILING
1
2
3
4
At first bubbles of air are expelled. This is not boiling
then water remains quiet while temperature is rising
If pot is Old and has rough surfaces boiling is quiet
If pot is New bumping ensues and water is violently expelled
EXPERIMENT WITH MERCURY
Small amount of ether
Ether Vapor
A
Ether does not evaporate because no air space remains, but the boiling point has been exceeded and Ether should evaporate. It is overheated.
B
By striking tube Ether evaporates gradually and Mercury level is lowered
Glass Tube
Mercury
Level of Mercury column forced down
Mercury Bath

Experiment With Mercury Column

Another exepriment which indicates just what is meant by the superheating of liquid and the effects that are produced thereby may be performed with the aid of a mercury column. A clean glass tube about ninety centimeters long is used for this purpose. One end of this tube is closed and through the open end mercury is filled into the tube and a little air-free ether is also allowed to enter the same. The tube is then inverted in a trough containing mercury. The ether will rise through the mercury to the top. If there is no air space left, the ether will not evaporate, although the ether may be at such a point that evaporation should normally take place. That is, the ether may be under tension and a state of pseudo-equilibrium exists. The ether has been superheated. This can be easily demonstrated by striking the tube a slight blow. This brings about the vaporization of the ether which is manifested by a lowering of the mercury level in the tube.

GAS—WHAT OF ITS FUTURE?

(Continued from page 178)

has increased 1,000 per cent and herein chiefly lies the reason for rapid increase in consumption. Fifty years ago, used almost entirely as an illuminant, and even up until fifteen years ago little progress was made. Five years ago a new era set in for the gas companies, thanks to a large extent to their own intensive efforts and a realization of the needs of the situation. Today, it might well be said that a new gas industry has sprung into existence, not in a spectacular manner but the change has been radical compared with conditions of even five years ago. The application of gas to heating began with the old-style gas range, extended to heating appliances for homes on a small scale until now its use has been extended to virtually all industries where heat is required, including even the giant steel plants in the Pittsburgh district which are the largest consumers of gas in the world. New uses for gas heating are constantly being evolved and are responsible to a large extent for the upward curve in consumption.

Some Developments

One of the most important developments of the gas industry in recent years has been the change from the old method of providing a standard measured in candle power to that of the British thermal unit system. In other words, in recognition of the fact that gas is now universally the means of generating heat, gas companies are no longer compelled to keep their product to the costly method of providing a high candle power. The practice of measuring standards on the British thermal unit system has now become almost universal among the public utility commissions throughout the states and aided the companies to a great extent in bringing down the costs of production.

That the consumption of gas is likely to continue to increase seems certain and there are a number of good reasons as to why it should. The chief argument of the gas experts is that dwindling of the nation's resources in time will compel industry to depend more and more upon gas for heating purposes. The argument is made that the most effective way to conserve the nation's oil and coal supply is to first convert it into gas, obtaining all the by-products and in addition a greater amount of heat.

Natural Gas

In the foregoing comments, little account has been taken of natural gas industry, which, of course, can produce and distribute the product at a much lower rate than those companies having to manufacture the gas. The largest gas fields in this country are in the West Virginia region. The province of Alberta in Canada also contains a very large deposit of gas which has only as yet been scratched owing to the small demand. That there is very little likelihood of the natural product gaining a large proportion of the output is certain unless there should be discovered large deposits of gas in this country, a contingency which now appears extremely unlikely.

Sales of Manufactured Gas in the United States 1901-24 Inclusive

In thousands of cubic feet, 000 omitted	
1901	101,625,366
1902	92,714,667
1903	105,676,479
1904	113,630,140
1905	112,444,237
1906	122,849,725
1907	132,011,582
1908	138,570,073
1909	143,117,693
1910	149,430,549
1911	159,100,674
1912	178,228,754
1913	188,285,840
1914	198,838,834
1915	204,309,522
1916	231,381,313
1917	264,493,003
1918	271,593,141
1919	306,632,786
1920	319,887,813
1921	326,950,900
1922	350,000,000
1923	384,722,000
1924	405,344,000

Natural gas reserves in certain sections of the country are already being depleted and the predic-

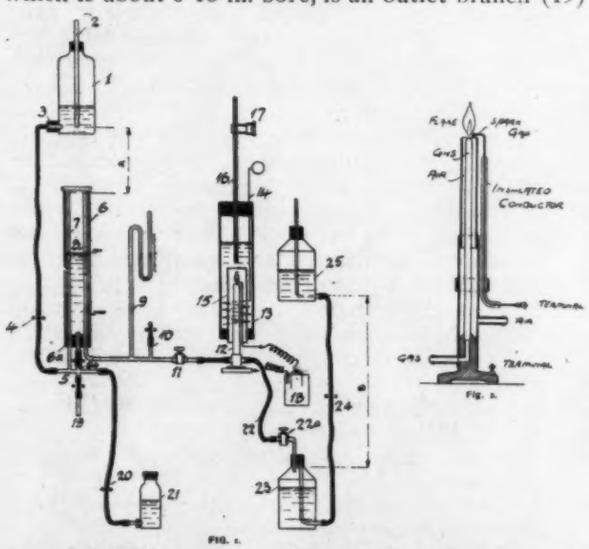
(Continued on page 187)

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

A SIMPLE GAS CALORIMETER

THE main parts of the calorimeter are: A 1,500 to 2,000 c.c. bottle with side tubulure, a 1,000 c.c. graduated glass measuring cylinder, a 500 c.c levelling bottle, a thick-walled glass cylinder, open at both ends, for forming the actual calorimeter body, a bunsen burner, a "W.D." surplus spark coil, two 1 to 2 gallon tins, a small supply of glass and rubber tubing, and, finally, a good thermometer, divided in 1-20° C., with magnifier reader.

The whole outfit is put together as shown in fig. 1, where (1) is the 1,500 to 2,000 c.c. bottle, which fitted with a dip pipe (2) and side outlet (3) acts as a Mariotte even-pressure continuous flow bottle, and by means of rubber tubing and pinch cock (4) is connected to glass tube (5), of which a branch (7) terminates just under the top of the inverted 1,000 c.c. measuring cylinder (6). Another tube, but made from 1 mm. bore capillary glass tubing, also terminates here, and water tightness is assured by rubber or paraffin-soaked cork (6a). One pipe (5), which is about 3-16 in. bore, is an outlet branch (19)



provided with a short rubber tube and pinch cock. Pipe (5) continues in rubber tubing (20) with pinch cock, which connects the levelling bottle (21) to the system. In connection with capillary tube (8) is a mercury pressure gauge (9) and branch (10). This latter is provided with short rubber tubing and pinch cock, and serves as inlet for the gas to be tested, which is aspirated by discharging the water in (6) through outlet (6b). The gas, after being washed through three or four times, is brought to the room pressure by operating the levelling bottle (21) and the pinch cocks (6b) and (20). In the same way the gas pressure is equalized in an Orsat burette. Stop cock (11) serves to cut off the burner (12) while manipulating the gas adjustments.

An ordinary bunsen burner is employed; the only alterations being that the gas nozzle is extended by means of a copper tube, ⅛ in. inside diameter, flattened at the top end so as to form a very fine slit. The burner tube proper is extended by a glass tube, and the ordinary air inlets are closed. A branch pipe for air is soldered to the burner tube, so that the air required for the combustion enters through this pipe, passes up the annular space, and meets the gas at the top, where ignition takes place by means of a continuous spark from a small "W.D." ignition coil. One terminal is in electrical contact with the metallic body of the burner. The other terminal is conducted through an insulating glass tube to within 3-16 to ¼ in. of the top of the central copper gas tube. The heat generated by the continuous spark is negligible.

HEATING VERTICAL RETORTS WITH COAL GAS

INVESTIGATION was made to determine the practicality of printing coal gas, in vertical retorts instead of producer gas made from coke. Experiments were carried out in one setting, at first. It was found that the combustion of the gas was fully uniform with a tendency for the upper chambers to have an excess and the lower chambers insufficient gas. This difficulty was adjusted and the gas was then applied to the other settings as well.

In the tabulation which follows, there is given a comparison of thermal data to show the heat consumption in the old and new method of heating retorts.

Fuel Consumption per Ton of Coal Carbonized

	Thousands B.t.u.
Average coke fuel only under normal operation—	
Coke 13 per cent. or 260 lb. at 12,000 B.t.u.	3,120
For period of 3 months' partial gas-firing—	
Coke 9.03 per cent or 180.71 lb. at 12,000 B.t.u.	2,168.52
Gas 1,361 cu. ft. at 475 B.t.u.	646.48
Total	2,815.00
Reduced heat consumption 305,000 B.t.u. or 9.77 per cent below normal.	
For period 1 month parial gas firing—	
Coke 6.62 per cent or 132.45 lb. at 12,000 B.t.u.	1,589.00
Gas 1,967 cu. ft. at 474 B.t.u.	928.40
Total	2,517.40

Reduced heat consumption 602,600 B.t.u. or 19.31 per cent below normal.		
For period 9 days' maximum partial gas firing—		
Coke 4.96 per cent or 99.2 lb. at 12,000 B.t.u.	1,190.40	
Gas 2,215 cu. ft. at 478 B.t.u.	1,058.70	
Total		2,249.10
Reduced heat consumption 870,900 B.t.u. or 27.91 per cent below normal.		
By deducting the average coal carbonized and fuel consumed on the only one of five settings working on coke fuel—		
Coke 3.22 per cent or 64.42 lb.		773
Gas 2,768 cu. ft. at 478 B.t.u.		1,323
Total		2,096
Reduced heat consumption 1,024,000 B.t.u. or 32.84 per cent below normal.		
Converting the coke fuel to gas in above—773,000÷478=		1,617 cu. ft.
Plus gas fuel=		2,768 cu. ft.
Estimated gas consumption of 478 B.t.u.		4,386 cu. ft.

(Gas World, August 1, 1925, page 97.)

"How to be a Gas Man" by mail in 24 Lessons

Columbia course to start in fall

The teaching of gas company operations through the mails is the aim of a new correspondence course, sponsored by Columbia University and the American Gas Association, which will be given this year under the direction of Professor Jerome J. Morgan of the Columbia faculty.

The establishment of this course is the direct result of the increased interest in the manufactured gas business which has taken place during recent years following the application of gas fuel to house heating and to large industrial heating processes.

The program of lessons is as follows:

1. History and function of the manufactured gas business; the physical characteristics of gases; fuel gases and their composition.
2. The components of fuel gases; the heating of gas making apparatus.
3. Coal and its relation to coal gas; carbonization of coal; general outline of a coal gas plant.
4. Carbonization apparatus; design, construction and operation of standard benches; horizontal troughs; inclines; verticals.
5. Coke ovens; design, construction and operation; coal handling and crushing machinery.
6. The blue gas reaction; raw materials for carburetted blue gas; steam boiler plant design, construction and operation; blue gas plant accessories.
7. Description of the carburetted blue gas process; design of the machine; operation of the apparatus; controls; waste heat boilers.
8. Carburettor reactions; cracking of hydrocarbon oils; relation of oil cracking to coal tar cracking; naphthalene.
9. Manufacture of Pacific Coast oil gas.
10. Condensing and scrubbing with especial reference to tar removal and ammonia recovery; tar extractors and exhausters; distillation of ammoniacal liquor.
11. Oxide purification—materials, size and types of boxes; methods of operation; liquid purification—theory, apparatus and operation.
12. Developments in the art of gas manufacture and problems to be met in the future; low temperature carbonization and complete gasification; the elements of gas plant design.
13. Storage and distribution of gas; holders; main conductivity; main capacities; pressure surveys.
14. Gas pumping machinery; high pressure distribution.
15. Gas services; meters and governors; unaccounted for gas.
16. Proper function and operation of a new business department.
17. Appliances; design, installation, performance and adjustment; house piping.
18. Theory of gas utilization; flame temperature; heat transfer; ventilation; recuperation.
19. Use of gas for industrial purposes and attending problems.
20. Function of the chemical laboratory in gas manufacture and utilization.
21. Accident prevention, safety and first aid.
22. Importance of relation of accounting and statistical records in reference to construction and operation.
23. Principles of rate making; fair value; valuation; undistributed structural costs; going concern value.
24. Public relations.

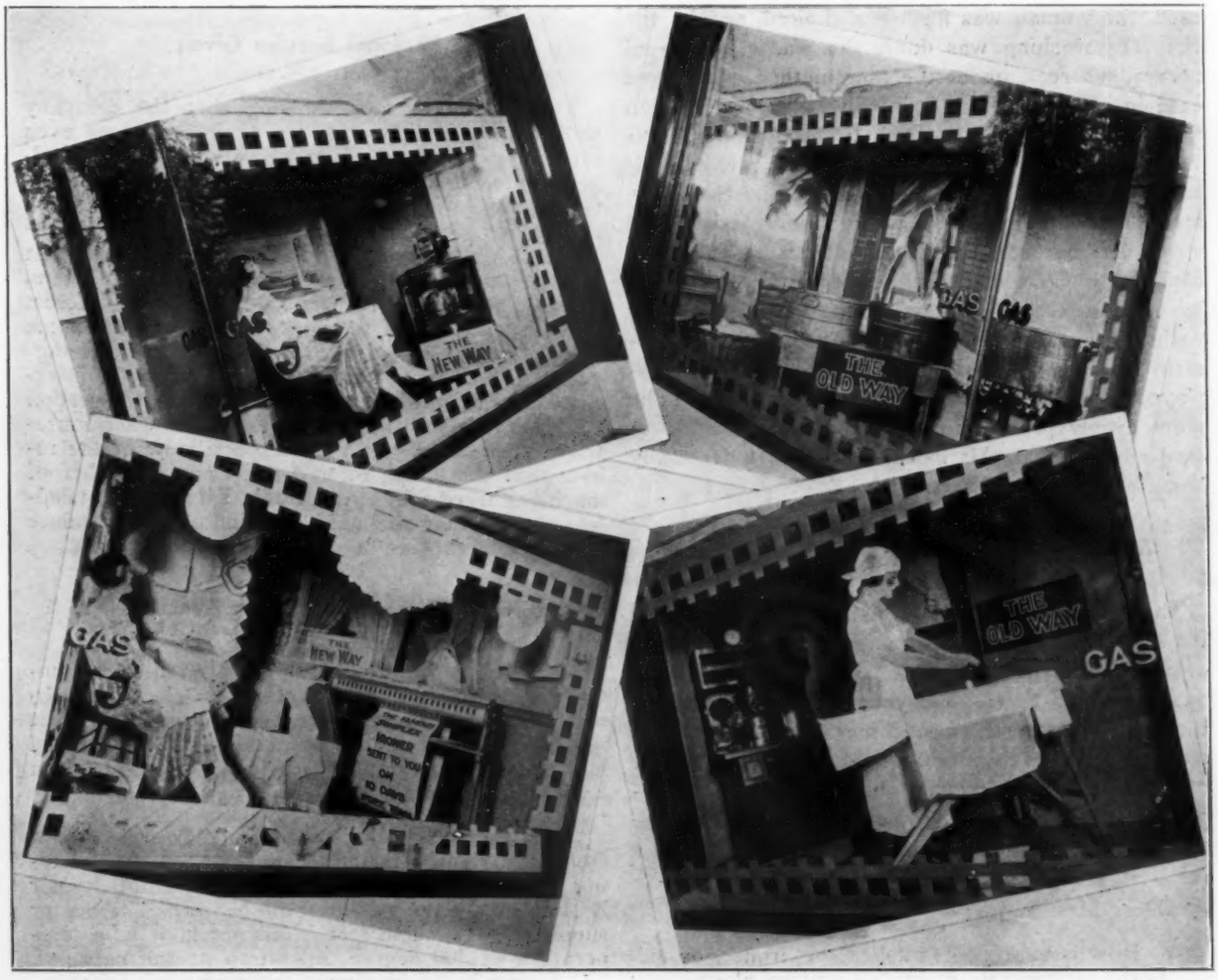
Gas-Fired Laundry Equipment

How gas companies are getting good business field

W. B. Stoddard

THAT gas can be of help in the laundry has long been known, for many housewives have been taking advantage of the convenience of gas irons, but it remained for the Portland Gas & Coke Co., Portland, Ore., to demonstrate by their gas-fired washer and ironer how washing and ironing may be done in a single day without fatigue to the laundress.

One of their methods of introducing these laundry helps is to locate some of the best laundresses in the city, whom they instruct, free of charge, in the operation and maintenance of their machines, and undertake to provide them with work. In their advertising along this line they point out that they are prepared to supply competent laundresses who are familiar with these particular machines, and turn out good work. They supply each laundress with a little kit bag, large enough to hold an oil can, small wrench and screw driver—just enough to make ordinary adjustments. In this way they obtain the co-operation of the best laundresses who operate their machines under ideal conditions, and also build for the machines a reputation for excellence because they are competently operated.



Window Displays Back Up Advertising

When advertising their laundry equipment in the papers they backed up this printed publicity with four windows contrasting the old and the new methods of washing and ironing. The back porch atmosphere was used in all four cases, and they did not attempt to exaggerate, as is so often done, by having depressing and dirty surroundings when illustrating "the old way." They knew that our grandmothers were just as clean and just as fond of shady, vine-covered, rose-wreathed verandas as are the present-day housewives. So the settings were practically the same for both sets.

But the difference in the faces of the figures told the tale more plainly than words. Where the old tubs, washboards, boilers and clothes baskets were used, the woman was flushed and tired, and by the time the washing was done, she was a bundle of nerves, whereas, under the new method, she sat at ease in a comfortable chair, with a small clock on the table beside her to mark time, and let the revolving machinery do the work. Similarly, when it came to ironing, the heat of the iron and the stove, and the constant steps between ironing board and stove, left her completely fagged out at Tuesday's end. With the ironer, on the other hand, she did not have to move at all, but sat at her machine visiting with a friend, while she ironed her clothes. Specimens of clothes ironed by the new process were displayed all around the window and were shown to be more evenly pressed than when done by hand. A card advised that this ironer would be sent to any home on a ten days' free trial.

Making It Worth While for the Customer

The plan used by another western concern to boost the sale of these machines made it to the advantage of all purchasers to interest their friends and acquaintances in them. The company advertised that if a certain number of machines were sold before a certain date each purchaser would get a discount or a credit to her account. In addition to newspaper advertising along this line direct mail was used, to each purchaser being sent the letter:

Dear Mrs. Smith:—

How is your new washer (or ironer, or both, as the case might be) getting along? Would you care to go back to the old way of washing? I am pretty sure you would not.

Just as soon as we complete the sale of 25 washers and ironers—provided it is done before October 1st, we will credit $7.50 to your account, and give that discount to all purchasers.

You will naturally wish to profit to that extent, and we hope, therefore, that you will mention these machines, and what they have meant to you, to some of your neighbors. If they know that it has made your housework easier, they will, of course, be interested. We will gladly let them prove it in their own homes, too. Perhaps you can suggest a few names on the enclosed card. We will appreciate the favor, and we think your acquaintances will, too.

Meantime, if there is anything about the machines' operation that is not exactly clear, or any adjustments to make, just call us. We'll have our service men out in a jiffy.

Personal Service Given

The last paragraph, showing that the company took a personal interest in their machines even after they were sold, always created a friendly feeling, while the manner in which the letter was written usually brought back the card with the name of one or two prospects. As all of them were acquaintances of the original purchaser, it was not difficult for the salesman to get an audience with them. Usually a chance was likewise gained to interest several neighbors of the new prospect, when a home demonstration was given. The salesman would suggest that perhaps a neighbor or two might be interested in watching the operation, and the suggestion was generally followed and one or more other housewives summoned. As the prospect knew of the rebate that was being offered if a certain number of machines were sold by a certain date, it was needless to say that she used her influence to induce these acquaintances to make a similar purchase.

Gas Heaters and Electric Washers

The Laclede Gas Co., St. Louis, Mo., in their laundry campaign, frankly advertised an electric washing machine of standard make, but coupled with it was publicity for their gas heaters. They featured leisure and happiness through the use of modern laundry equipment:

When the suits leave the ringer they still contain from ¼ to ½ of a pound of moisture. A dryer having a capacity of 300 suits is used and hot dry air is supplied by the gas-fired air heater. The heater supplies 50,000 cubic feet of air per hour at a temperature of 300 deg. F. operating at full capacity. The heater has a maximum consumption of 500 cubic feet of gas per hour, so that, operating at 40 per cent of the rated capacity, suits are being dried with only a cubic foot of gas each.

GAS IN THE NEWSPAPER PLANT

(Continued from page 172)

to perform, yet it is always kept at working temperature.

During a test over a day's operation of 24 hours, having casting periods totaling 7½ hours and stand-by periods totalling 16½ hours, turning out the regular editions of the morning and evening papers, we obtained the following results:

Total length of test—24 hours.
Total length of casting periods—7½ hours.
Total length of stand-by periods—16½ hours.
Total number of plates cast—1,215.
Weight of each plate—84 lbs.
Total weight of metal cast—102,060 lbs.
Gas consumption during casting period to remelt amount of metal—14,370 cu. ft.
Pounds of metal cast per cubic foot of gas consumed—7.1 lbs.
Gas consumed during stand-by periods—4,880 cu. ft.
Pounds of metal cast per cu. ft. of gas consumed over casting and stand-by period—5.3 lbs.

Difficult Condition Met

A stipulation in their specifications was that during heaviest casting period, furnace should have capacity enough to remelt an equal weight of metal as was cast, or to maintain a constant level in the pots. This specification was fully accomplished, which astonished this newspaper manager, who admitted this was never possible with coal.

The success of this test and the satisfactory operation of these furnaces created enthusiasm among the operators. This enthusiasm is such that recently we were advised by one of the operators, that if the gas furnaces were changed back to former fuel, the whole force would go out on a strike.

Conclusion

In conclusion, let me outline why gas is preferred even at twice the cost of coal.

1. With a properly instaled equipment, there is no lag—metal can be melted as fast as cast. A constant level of metal is always at hand at just the right temperature. I have never seen this done with coal. During the casting period, in a coal heated furnace, no cold metal is added, melting is done through stand-by periods. Frequently during a rush edition when casting is constant, great anxiety is experienced when operating a coal-fired furnace.
2. Less dross with gas due to no overheating of metal.
3. Cleaner and cooler rooms. With coal, the ash dust gets into the intricate parts of the machinery and motors, producing wear. Frequently it gets on the plates and prevents clean-cut printing.

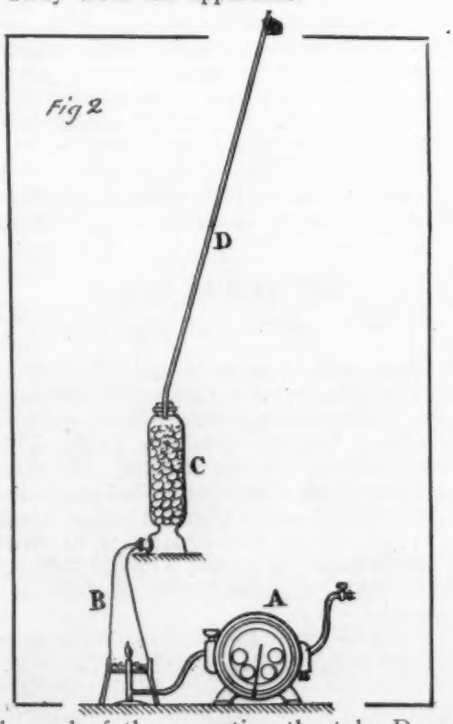
The only disadvantage of gas is its greater fuel basis cost. This generally runs twice that of coal.

Yet you will agree that a small part of the industrial fuel business is obtained on a comparison of actual fuel costs. There are always other things that must offset this and many times, things you do not discover until after the installation is made.

THE SULPHUR CONTENT OF COAL GAS

(Continued from page 174)

vapors, sulphite and sulphate of ammonia, rise in the elongated glass tube B, and are then condensed in the large test tube C. This test tube is filled with glass beads which have been moistened with water. Finally the vapors rise through the tube D and are carried away from the apparatus.



At the end of the operation the tube D and the test tube C are washed with distilled water. The liquid that is obtained in this manner is then oxidized with the aid of a little brominated hydrochloric acid. This results in the conversion of the sulphur products, contained in the aqueous solution, into sulphuric acid. Then the regular analysis for sulphuric acid is carried out, precipitation being effected by the addition of a solution of barium chloride, which gives soluble barium sulphate. The latter is removed by filtration, is washed and dried, then ignited and weighed. A simple calculation will then give the weight of sulphur from the weight of barium sulphate.

Removal of Carbon Disulphide

In the removal of the carbon disulphide content of gas by treatment with lime, considerable difficulty is encountered which tends to negate the ef-

fectiveness of the process. A newer method of removing the carbon disulphide has been suggested by M. O. Guillet. This consists in passing the gas heated to a temperature of 130 degrees C and saturated with water vapor through an oxide purifying box which is also maintained at an elevated temperature. When this is done the following reaction takes place:

$$CS_2 + 2H_2O = 2H_2S + CO_2.$$

This reaction is very slow at ordinary temperatures but is quite rapid at elevated temperatures.

The hydrogen sulphide that is liberated during the course of this reaction is absorbed by the oxide of iron just as soon as it is set free.

Another process for the removal of carbon disulphide from gas has been patented by Carpenter of the South Metropolitan Gas Co. of London. In this case the sulphide of carbon is decomposed at a temperature of 410 degrees C. in the presence of reduced nickel which acts as a catalyst. The reducing agent is the hydrogen that is contained in the gas itself. The reaction is as follows:

$$CS_2 + 2H_2 = 2H_2S + C.$$

The carbonaceous matter which is deposited in the course of the reaction is removed by oxidation.

GAS MEN AT M. I. T.

(Continued from page 176)

dated Gas Company, and Mr. O. M. Olsen of the Eclipse Fuel Engineering Company, Rockford, Ill.

At the final meeting of the 1925 committee of the New England Association of Gas Engineers, having in charge this work at the Institute, Mr. Francis E. Drake, Lynn, Mass., was succeeded as chairman by the writer, Mr. John J. Quinn, Quincy, Mass. Mr. James W. Howard, a former student, of Pawtucket, R. I., was elected secretary. Mr. H. Vittinghoff, Stone & Webster Company, Boston, Mass., continues as a committee member.

There will be two additional members selected in the near future. The committee in charge this year comprise the above, together with Mr. R. D. Stuart, Jr., Pawtucket, R. I., and Mr. C. I. Prichard, Lynn, Mass.

KEEPING CUSTOMER-OWNERS INTERESTED

(Continued from page 173)

Sell Them Part of the Company

. Sell them a part of the company and not a certificate. Convince your prospect that you are making him part owner of a company whose activities are closely allied with general public interest and welfare; that your company possesses relatively large and growing amounts of immovable property fixed in the ground of the community and devoted to community work and progress; that this investment, soundly managed and efficiently regulated, produces stable and reasonable earnings.

3. Tell them something of the great transposition of public utility capital from the large investor to investors of moderate means. Let them know that our business is an investment, not a speculation, and that regulation and protection against unnecessary competition, combined with new ideas of the characteristics of our business and new conceptions of our obligations, have diverted the course of our financial channels.

Importance of Personal Contact

4. Personally I attach much importance to the personal contact surrounding the initial sale and future relations. It seems to me that the sale of our stock should be direct from company to consumer or through an agency expressly created for that purpose and controlled by the company. I don't intimate that other plans have not been successful, but fundamentally I say it is hard to sell yourself through a third party. Continuing relations with the customer owner in a satisfactory manner will be much easier if he is familiar with the company officials and the company and its property.

Resale of Stock

5. There should be a distinct understanding with your customer about the resale of his stock. It is my humble opinion, of course, that we should do everything possible to help the stockholder resell

Keeper of the Fires
Down through the centuries Woman has been the keeper of the home fires.
At first she kept them blazing among the rocks of the open cooking place. An age passed and the rock fire became the sheltered hearth. For centuries Woman drudged along until inventive genius evolved gas service, the modern burden bearer.
Today—"If it's done with Heat, you can do it Better with GAS"
Woman still remains the keeper of the home fires, but gas service insures her forever against the tyranny of ashes, smoke and dirt.
(Your Name and Address Here)
A.G.A.-452

An Advertising Suggestion of Marked Attractiveness

his stock. When he buys stock, however, he should be made to understand that he is buying a piece of property; that this property is devoted to useful community purposes; that it is real and that there is no reason why it should not always have a good market value. In other words, it is important that we make no promises and no commitments in the interest of future relations. Teach them to buy property from you as they would buy it from a real estate man.

Plan for Continuing Relations

After we have sold our stock and sold it properly, we have planned the foundation for continuing relations with customer owners on a satisfactory basis. But we cannot stop there and these few suggestions will give you my idea of continuing the good work:

1. Write them a letter every three months, advising that their dividends have been authorized. Make your letters friendly and human and tell them some of the important things that have transpired in your business since their last dividend was authorized.

Invite Them to Meetings

2. Invite them to your annual stockholders' meetings. Most companies do this, but again it might be wise at times if something unusually important comes up affecting their interest and your interest to call them in for another meeting. Talk it over with them; get their view.
3. Send them bulletins frequently or perhaps a company magazine. I am not advocating that you start a company magazine, for this is something which every executive must decide for himself. If you have one, send it to them.

One of the big secrets of continuing relations with customer owners is to tell them our story right in the beginning and keep everlastingly at it.

4. No manual or code on this subject would be complete without reiterating that worn-out suggestion, "Tell it with printers' ink."

(Continued from page 180)

tion is made that the manufactured product will continue as it has for the past few years to make up a larger proportion of the consumption being supplied from these sources.

Oil has been mentioned as a possible rival for gas and a few years ago when it had not yet become apparent that the reserves were being depleted, the argument seemed well founded. Oil when used as fuel has many of the advantages of gas, chief of which is the fact that it is easy to handle and eliminates practically the smoke nuisance attendant upon the use of coal. Were it not for the fact that demand for oil from other sources seems well able to absorb the production except in abnormal times, this product would undoubtedly in time become a serious rival to gas, but little thought is now given to this argument in view of its price and depletion of available supplies.

Gas Securities Popular

Reflecting the stability of the gas industry, securities of the gas companies within the past few years have come to be one of the most favorite means of investment among those seeking to place their funds in public utility issues. Any doubt of this is quickly dispelled by a glance at the selling prices of some of the issues. Take the more prominent companies such as Consolidated Gas (N. Y.), Brooklyn Union Gas, Peoples Gas Light & Coke, Laclede Gas Light Co., and numerous others. Their securities and those of practically all the other companies sell at prices which vie with those of the power companies.

The decisions in the so-called Dollar Gas cases in New York City which have uniformly been decided in favor of the gas companies, safeguarding their rights, has had a national effect and has done much to stabilize prices of gas securities all over the country. The Federal courts have laid down the law that gas companies must be protected if they are to continue to furnish this public necessity.

Conclusion

What then is the future for the gas industry? Taking the past few years, total manufactured gas consumption in 1918 was 272 billion cubic feet. In 1919 it passed the 300 billion mark, reached 350 billion in 1922 and in 1924 had climbed to 405 billion cubic feet. The curve of consumption has been accelerated most during the past four years. Taking all in all, there is every indication that with the conditions in the industry there is no reason but to expect that within the next few years at least the curve of consumption will continue upward as it has, meaning prosperity for gas companies given reasonable freedom from onerous rate interference.

REVOLUTION IN MAKING GAS FUEL INDICATED BY WYOMING EXPERIMENT

Gas engineers and gas men generally are watching with considerable interest the experiment of a small gas company in Sheridan, Wyoming, which is using the local lignite deposits, which are mined adjacent to the city, for the manufacture of coal gas supplied to residents and industries of Sheridan for heating and cooking purposes.

This is believed to be the first time that lignite has ever been used successfully in coal gas manufacture to the entire exclusion of other materials, and, if applicable to other gas companies, may result in untold economies by eliminating high freight rates and the necessity of using high priced gas or coking coal.

The use of lignite coal has already made a material difference in coal cost in Sheridan, and the city is benefited by the $2,100 per month now being spent there, in addition to the reduced rate in gas which this has helped to bring about, not only owing to the lower price and greater efficiency of the coal, but the great saving on freight. Southern Colorado coal used to cost the company $376 per carload for shipment in comparison to the $15 to $18 which it now pays.

NEWS OF THE GAS INDUSTRY

Pacific Coast Gas Men Hold Annual Meeting

On Monday, August 17, at 2 p. m., the Thirty-second Annual Convention of the Pacific Coast Gas Association opened at the Multnomah Hotel, Portland, Oregon.

Delegates came from all over by auto, train and boat, and when President Hall called the first meeting to order the Grand Ballroom was well filled.

After Mayor Baker had bidden the visitors welcome to the Rose City and was led out by a bodyguard of sixteen Animated Gasco Briquets, Guy W. Talbot, president of the Portland Gas & Coke Co., followed in welcoming the meeting.

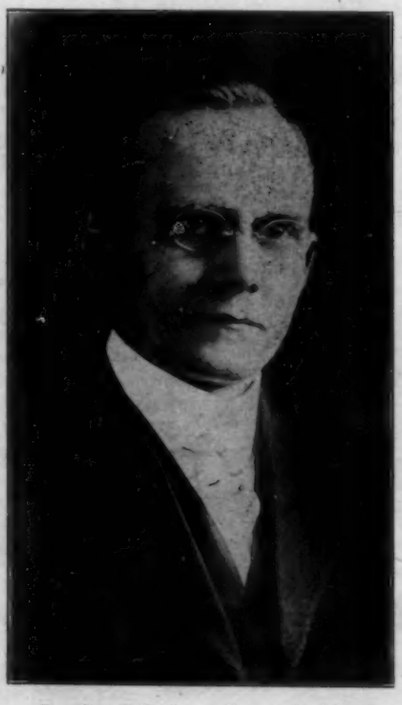
One of the most interesting presidential reports ever read at a Pacific Coast Gas Convention was the paper which E. L. Hall, president of the association, submitted and in which he called the attention of the executives of the utilities to the necessity of their taking a larger interest in the association and what it was trying to accomplish; and also that they should be sold to the idea that it was part of the duty of every gas utility employee when he was put in charge of committee work, to carry out such work the same as he would any other of his duties.

Clifford Johnstone, of San Francisco, executive secretary of the association, then submitted his report, which was short but interesting. He showed that the association now has 757 members and has succeeded in running its expenditures on a budget.

L. M. Klauber, as chairman of his committee, submitted the new constitution, which was unanimously adopted.

New Officers

W. H. Barton then submitted on behalf of the Nominating Committee the following nominees for the ensuing year: President, F. J. Schafer, general manager Southern California Gas Co., Los Angeles; vice-president, W. S. Yard, vice-president Pacific Gas & Electric Co., San Francisco; treasurer, D. G. Martin, Pacific Gas & Electric Co., San Francisco; secretary,



F. S. Schafer, General Manager So. California Gas Co., President-elect Pacific Coast Gas Association

Clifford Johnstone, San Francisco; directors, E. L. Hall, general superintendent Portland Gas & Coke Co., Portland, Ore.; D. J. Young, consulting engineer Bylesby Engr. & Management Corp., Tacoma, Wash.; J. E. Kelley, superintendent gas dept. Western States Gas & Electric Co., Stockton, Cal.; H. M. Crawford, sales manager Pacific Gas & Electric Co., San Francisco; H. L. Masser, gas engineer Los Angeles Gas & Electric Corp., Los Angeles; W. M. Thompson, president Reliance Mfg. Co., Pasadena, Cal.; G. P. Egleston, manager H. R. Basford Co., San Francisco.

After these were elected, Los Angeles was chosen as the next place for the annual convention to meet and scores of delegates have already expressed their opinion that Los Angeles will have to go some to come up to the hospitality shown the visitors by the Portland Gas & Coke Co. and the service on hand day and night for the comfort and pleasure of those in attendance.

One of the most interesting matters submitted to the convention then was the model municipal gas ordinance prepared by C. R. Miller and his committee. A great deal of work has been put on this and the head of the Building Bureau of the City of Portland expressed himself publicly in favor of some such ordinance by which the city officials might be guided as coming from those who were expert in the gas business.

A report from the Committee on the Certification of Appliances and also from the Committee on Affiliation with the American Gas Association was submitted by E. L. Hall, chairman of both committees.

It was commented upon that the convention was only 99 per cent complete with the absence of John Clements, now 81 years old, who has attended thirty consecutive annual conventions and sent a very interesting letter of regrets.

The Atlantic City Convention

The coming convention of the American Gas Association to be held at Atlantic City was given a boost by J. W. West, Jr., of New York, who invited all to be present and told about the wonderful interest being taken in the exhibition of appliances as 98 per cent of the space available has already

been taken and almost 200 exhibitors have signed up so far. He also referred to the research work done at the laboratory by the A. G. A. in charge of R. M. Conner, formerly of Portland. The convention was much interested in this matter and is looking forward to very helpful results for the industry in general.

The afternoon was all too short for all the important matters which were transacted but bright and early the following morning the business part of the convention

W. S. Yard, Pacific Gas & Electric Co.; Vice-President-elect Pacific Coast Gas Association

took hold again, starting out with a very interesting article on "Premium Systems," by Donald E. Buyers of Portland.

W. S. Yard spoke on "The Future Fuel for Gas Making," which brought an avalanche of opinions. Leon Jones was one of those who felt rather optimistic about the future as he claimed the utilities were constantly finding ways to reduce the number of gallons of oil needed for a stated quantity of gas. On the other hand, F. J. Schafer said that in Southern California where they were using a great deal of natural gas there was indeed a serious and threatening danger of this gas running out in the next five or ten years when it would have to be replaced by manufactured gas and that gas men down there were very much interested in anticipating this event and finding the necessary fuel.

Advertising

One of the high-lights of the business of the second day was when Chas. W. Duncan, San Francisco, gave one of his always interesting and enjoyable addresses on "Advertising." He illustrated by one experience how his wife was for some reason or other "sold" to an electric range, and in spite of all his objections, insisted upon having one—so he was forced to put the gas range in the basement, as he was a commuter, and had to get his own breakfast and was generally in a hurry. Aside from the enjoyable and amusing part of his address there was the serious and well worth-while thought that the gas industry should discover a symbol which would create in the minds of the public something to represent the merits of gas.

That gas needs publicity and still more publicity, not so much for the appliances as for the product itself, was the contention of A. L. Crane of San Francisco, who gave a very interesting talk in which the main point was the appointment of a committee of advertising men both in the electric and gas industries for the purpose of making a survey to plan such advertising as would conflict less with the interests of the two industries. He showed that at the present time the one industry is generally hammering the other and that this should cease and a way found to sell electricity as well as gas on its own merits and not by belittling one another.

A series of interesting lantern slides was shown by J. H. Gumz in his talk on industrial uses.

Commercial Section

George E. Whitwell of Tacoma had charge of the Commercial Section on the second day and, after considerable discussion, in which F. U. Naylor, chairman of the committee, John H. Hartog of Portland, C. B. Babcock of San Francisco, A. L. Crane of San Francisco and J. C. Jordon of Oakland took part, it was decided to recommend to the directors of the association to seriously consider the immediate producing of publicity to be used by the member companies either as free reading matter or paid for. Several of the speakers, however, were not in favor of that part of the report which proposed to exchange display ads between members of the association for, as C. A. Bigelow of Buffalo pointed out, this had been tried over and over again and invariably failed.

Perhaps the most comprehensible and voluminous document prepared by any committee was that by a committee on "Home Serv-

D. G. Martin, Pacific Gas & Electric Co., Treasurer-elect

ice," of which C. R. Miller of Portland was also chairman. This volume is full of "meat" and interest but would be too extensive to be reproduced even in a separate article.

Many of the papers submitted at this convention will be published in full later in The American Gas Journal.

Public Relations

In speaking on "Public Relations" O. L. Moore of Los Angeles showed that nowadays the public utilities are more anxious to

receive complaints than they used to be to avoid them, inasmuch as they realize that by making customers satisfied they create an asset worth having.

Technical and Accounting Meetings

Bright and early Thursday morning, August 20, the delegates to the convention assembled, the Technical Section and the Accounting Section each in its own meeting room, the Technical Section in charge of W. S. Yard and later presided over by R. M. McCalley of Portland. The following took part in presenting reports and papers: W. H. Henderson of San Francisco on "Unaccounted-for Gas"; R. R. Ripley of Portland on "High Presure Distribution" Prof. S. H. Graf of Corvallis on "Pipe Protection"; Dozier Finley of the Paraffine Companies on "Protection of Underground Pipe"; H. S. Christopher of Los Angeles on "Pipe Corrosion and Problems of Protection"; and R. M. McCalley of Portland on "Reconstruction of a 1,500,000 Cubic Feet Gas Holder."

The day was all too short to get in all the speakers and part of the Technical Section had to be carried over until the following day, when F. H. Bivens of Los Angeles spoke on "Boiler Fuels," E. M. Capell of Portland on "Boiler Furnaces" and C. H. Wilcox on "Waste Heat Boilers," who said:

"Heat developed in the process of making gas is now being utilized as a by-product. The temperatures in gas generators often exceed 2,000 degrees and many companies are now installing boilers on the top of these generators to utilize the heat and the blast gases, which are ordinarily entirely wasted."

Studies of approved methods of cost and labor accounting systems were discussed by the accountants. The purchase of equipment, its storage and handling, were other problems gone into by the commercial men.

Credit departments maintained by gas companies for the accommodation of the public were reviewed by F. L. Nagel of Portland.

The report on "Transportation Cost" was presented by C. E. Neiderer of Portland, while B. H. Parkinson, also of Portland, spoke on "Cost Keeping on Auxiliary Units."

A report on "Purchasing and Stores Bureau" was presented by O. L. Moore and in the afternoon F. C. Ingram of Los Angeles spoke on "Customers' Bookkeeping Bureau" and C. R. Johnson of Portland on "Meter Reading."

The meetings of the Accounting Section were in charge of C. W. Platt, treasurer of the Portland Gas & Coke Co., and proved to be very interesting.

Portland newspapers were handled by Clifford Johnstone of San Francisco and John H. Hartog of Portland and gave considerable space to the convention, a great deal more than ever before has been obtained.

The Gas Convention was used as a source for furnishing speakers at the weekly luncheon meetings of various clubs. R. E. Fisher, vice-president in charge of public relations and sales for the Pacific Gas & Electric Co., was selected as speaker of the day at the Progressive Business Men's Club, but, unfortunately, had to be absent. His place was taken by Don Ray, manager of the bureau of public relations of the same company. Chas. W. Duncan was speaker of the day at the Rotary Club, and in both cases John H. Hartog of the Portland Gas & Coke Co. acted as chairman of the day. Eugene G. McCann, manager of the personnel department of the Pacific Gas & Electric Co., was the speaker at the Lions Club.

U. G. I. American Consolidation Officially Recognized

Philadelphia, Pa. — Governor Pinchot has approved the merger of the American Gas Company with the United Gas Improvement Company, and has issued letters patent to the consolidated company, the United Gas Improvement Company.

On March 14 Samuel T. Bodine, president of the U. G. I., and Morris W. Stroud, president of the American Gas Company, announced that control of the American Gas Company had passed to the U. G. I. through acquisition of "at least 75 per cent of the capital stock."

Gas Companies Ready to Ease Coal Strike for New York State

If the anthracite miners suspend production next month, the gas companies of New York State will be prepared to relieve even more of the public hardship incident to a coal strike than they did during the great strike of 1922.

Since that time, says the New York State Committee on Public Utility Information, gas plant capacity amounting to a production of 60 million cubic feet a day has been put into operation, so that at present the gas manufacturing establishments of the State have a daily capacity of 480 million cubic feet.

In addition, gas plants are now producing coke suitable for domestic use at the rate of a million tons a year, or about one-twelfth of the State's annual requirements of hard coal, where three years ago coke amounting only to 150,000 tons a year was being produced. Coke is steadily displacing hard coal for use in ranges and furnaces wherever it is available. Gas companies having it for sale as a by-product of their manufacturing

Clare N. Stannard Host to Public Service Employees

Clare N. Stannard, vice-president and general manager of the Public Service Company of Colorado, was host to the members of the securities department of the company, at a luncheon held at the tower room of Daniels and Fisher.

Addresses were made by Mr. Stannard and E. Salisbury Smith, the head of the department. The work done and the work to be done was gone over and what it means to the company and its customers was explained.

E. K. Hartzel Advanced

Denver, Colo.—E. K. Hartzel, for some time connected with the department of advertising and publicity of the Public Service Company of Colorado at Boulder, has been advanced to the position of assistant publicity director for the company. The new appointment making him assistant to Frank R. Jamison will give him a greater territory to proclaim the merits of the company and yet permit him to continue his headquarters at Boulder.